MAP I-1907

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

GEOLOGIC MAP OF THE LATIR VOLCANIC FIELD AND ADJACENT AREAS, NORTHERN NEW MEXICO

By Peter W. Lipman and John C. Reed, Jr.

MISCELLANEOUS INVESTIGATIONS SERIES
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DEPARTMENT OF THE INTERIOR
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A
A'
B
B'
C
C'
D
D'
F
Late Pleistocene fault scarp
4–14 meters high
Qal
Qf
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Tbs
Tsc
Tsv
Trt
Tav
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Tqc
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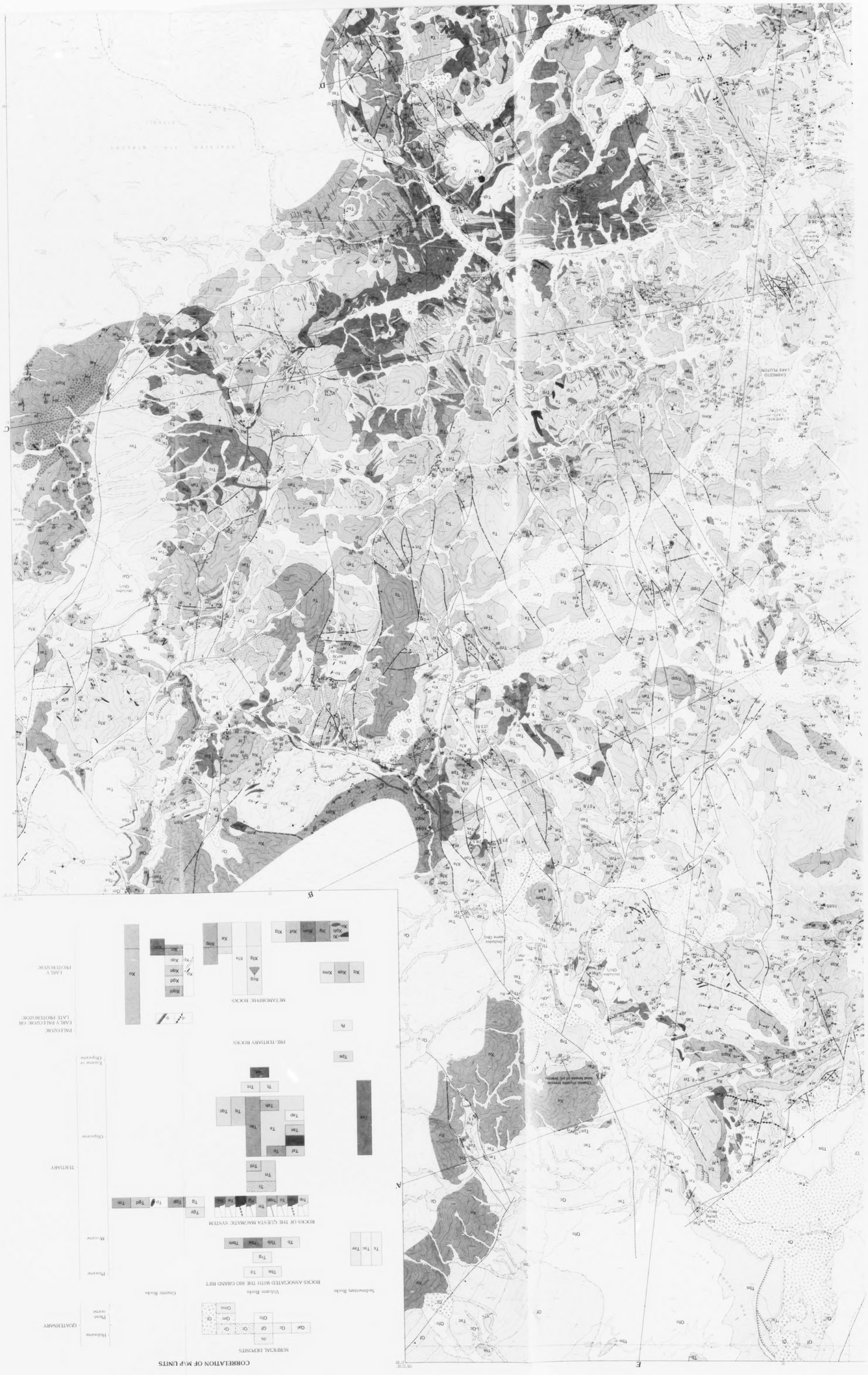


MISCELLANEOUS INVESTIGATIONS SERIES
MAP I-1907 (SHEET 1 OF 2)

DESCRIPTION OF MAP UNITS

and poor exposure. Ilse breccias of volcanic sediments are locally present and poor exposure. Ilse breccias of volcanic sediments are locally present

Tbx **Xenolithic basaltic andesite**—Dark-gray, fine- to medium-grained basaltic andesite containing abundant xenoliths of granitic rock. Forms small cinder cones and lava flows on the flanks of Cerro Mollera and Cerro Tres Orejas. Yields K-Ar dates of 16.5 ± 0.4 Ma (Oligocene).

Tbm **Basaltic mixed lavas**—Dark-gray to black basalt and basaltic andesite lava flows and cinder deposits. Includes the small shield volcano of Cerro Mollera (16.1 ± 0.3 Ma) and the cinder cone of Cerro Tres Orejas (15.8 ± 0.3 Ma). Overlies Tbx and Tgr; underlies Tvy and Qal.

Tgr **Granophyric rhyolite**—Light-tan to light-gray, fine- to medium-grained rhyolite forming domes and short, thick flows on the northern flank of the Questa caldera. Yields K-Ar dates of 17.2 ± 0.4 Ma (Miocene). Intrudes Tpp and is overlain by Tbm and Qal.

Tpp **Porphyritic rhyolite**—Light-tan to light-gray rhyolite containing 10–25 percent phenocrysts of quartz, sanidine, and minor plagioclase in a devitrified groundmass. Forms the core of the Questa caldera resurgent dome and the ridge between Red River and Cabresto Creek. Yields K-Ar dates of 18.9 ± 0.5 Ma (Miocene). Intruded by Tgr; overlies Tbx and Tvs.

Tvs **Caldera-moat volcanic rocks**—Interbedded andesite lava flows, rhyolite lava flows, and volcaniclastic sandstone and conglomerate deposited in the moat between the Questa caldera rim and the resurgent dome. Thickness exceeds 600 m in the moat south of the dome. Yields K-Ar dates of 19.1 ± 0.6 Ma (Miocene). Intruded by Tgr; overlies Tbx and Tpp.

Tvy **Younger granite and aplite (Miocene)**—Light-gray to orange-pink granite, locally porphyritic, and fine-grained aplite dikes and sills. Yields K-Ar and FT dating of 22–23 Ma at Ruby Mountain SW. Intrudes Tbx, Tgr, and Tpp; overlies Tvs. Forms the Questa caldera resurgent dome and the Red River intrusive complex.

Tvg **Older granite and aplite (Miocene)**—Light-gray to orange-pink granite and aplite porphyry. Yields K-Ar and FT dating of 27–28 Ma at Ruby Mountain SW. Intrudes Tbx, Tgr, and Tpp; overlies Tvs. Forms the Questa caldera resurgent dome and the Red River intrusive complex.

Tv **Andesite and dacite lavas**—Dark-gray to brown andesite and dacite lava flows and domes. Yields K-Ar dates of 28.5 ± 0.7 Ma (Oligocene). Intruded by Tvg; overlies Tbx and Tpp.

Tsv **Sulphur Gulch Volcanics**—Andesite and dacite lava flows, breccias, and tuffs. Yields K-Ar dates of 29.1 ± 0.8 Ma (Oligocene). Intruded by Tvg; overlies Tbx and Tpp.

Tpp **Porphyritic rhyolite**—Light-gray to pink rhyolite containing 10–25 percent phenocrysts of quartz, sanidine, and plagioclase in a devitrified groundmass. Yields K-Ar dates of 29.5 ± 0.8 Ma (Oligocene). Intruded by Tvg; overlies Tbx and Tsv.

Tbm **Basaltic mixed lavas**—Dark-gray to black basalt and basaltic andesite lava flows and cinder deposits. Yields K-Ar dates of 30.2 ± 0.8 Ma (Oligocene). Intruded by Tvg; overlies Tbx and Tpp.

Tbx **Xenolithic basaltic andesite**—Dark-gray, fine- to medium-grained basaltic andesite containing abundant xenoliths of granitic rock. Forms small cinder cones and lava flows on the flanks of Cerro Mollera and Cerro Tres Orejas (15.8 ± 0.3 Ma). Overlies Tbm and Tgr; underlies Tvy and Qal.

Tbx **Xenolithic basaltic andesite**—Dark-gray, fine- to medium-grained basaltic andesite containing abundant xenoliths of granitic rock. Forms small cinder cones and lava flows on the flanks of Cerro Mollera and Cerro Tres Orejas (16.1 ± 0.3 Ma). Overlies Tbm and Tgr; underlies Tvy and Qal.

SUBTRAVERTINE ROCKS: EARLY PROTEROZOIC

Xq **Quartzite**—Massive quartz latite porphyry lava flows and domes. Yields K-Ar dates of 1795 ± 45 Ma (Early Proterozoic). Intruded by Xgr; overlies Xmm and Xfm.

Xgr **Metasedimentary rocks**—Interbedded quartzite, schist, and metaconglomerate. Forms a thick sequence in the core of the Questa caldera. Yields K-Ar dates of 1810 ± 50 Ma (Early Proterozoic). Intruded by Xq; overlies Xmm and Xfm.

Xmm **Mafic metadiorite**—Dark-green, fine- to medium-grained metadiorite and metagabbro. Forms small stocks and dikes. Yields K-Ar dates of 1850 ± 60 Ma (Early Proterozoic). Intruded by Xgr; overlies Xfm.

Xfm **Felsic metadiorite**—Light-gray, fine- to medium-grained metadiorite and metagranodiorite. Forms the oldest exposed rocks in the Questa caldera. Yields K-Ar dates of 1890 ± 70 Ma (Early Proterozoic). Intruded by Xmm; overlies Xq.

CABRESTO LAKE PLUTON
BEAR CANYON PLUTON
RIO HONDO PLUTON
LUCERO PEAK PLUTON
Structural complex
Paleozoic and Proterozoic rocks in footwall of Bear Lake-Twinmile Creek thrust
SCALE 1:48 000
CONTOUR INTERVALS 10, 20 AND 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

GENERALIZED GEOLOGIC MAP SHOWING PRINCIPAL STRUCTURAL FEATURES

MAP SHOWING DISTRIBUTION OF HYDROTHERMALLY ALTERED ROCKS IN THE RED RIVER AREA

EXPLANATION

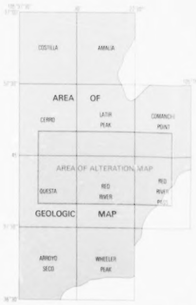
- Q — Surficial deposits (Quaternary)
- Intrusive rocks (Tertiary)
  - Tg — Granite
  - Tri — Rhyolite
  - Tql — Quartz latite
- Volcanic rocks (Tertiary)
  - Tt — Amalia Tuff and other volcanic rocks related to formation of the Questa caldera
  - Tv — Precaldera volcanic rocks
- pT — Pre-Tertiary rocks—Includes Paleozoic and Proterozoic units

Contact

Fault—Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side

Questa caldera wall—Dotted where concealed or occupied by intrusion

Acid-sulfate alteration related to intense pyritization



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ACKNOWLEDGMENTS

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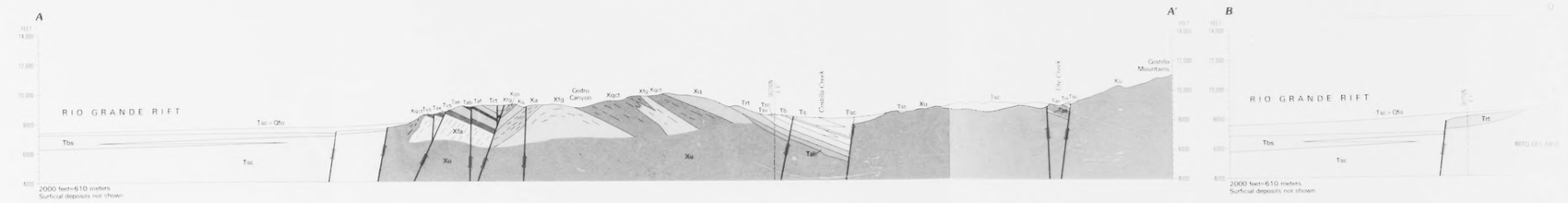

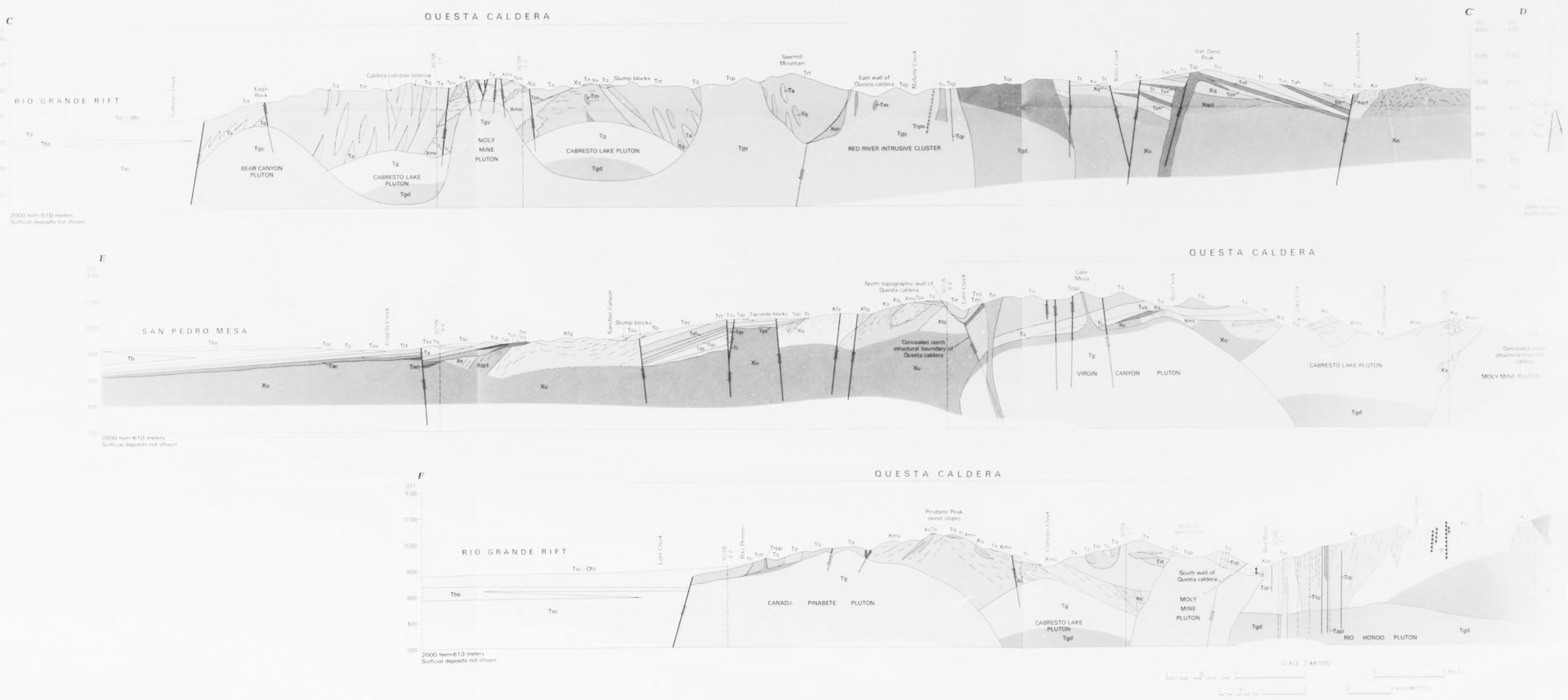

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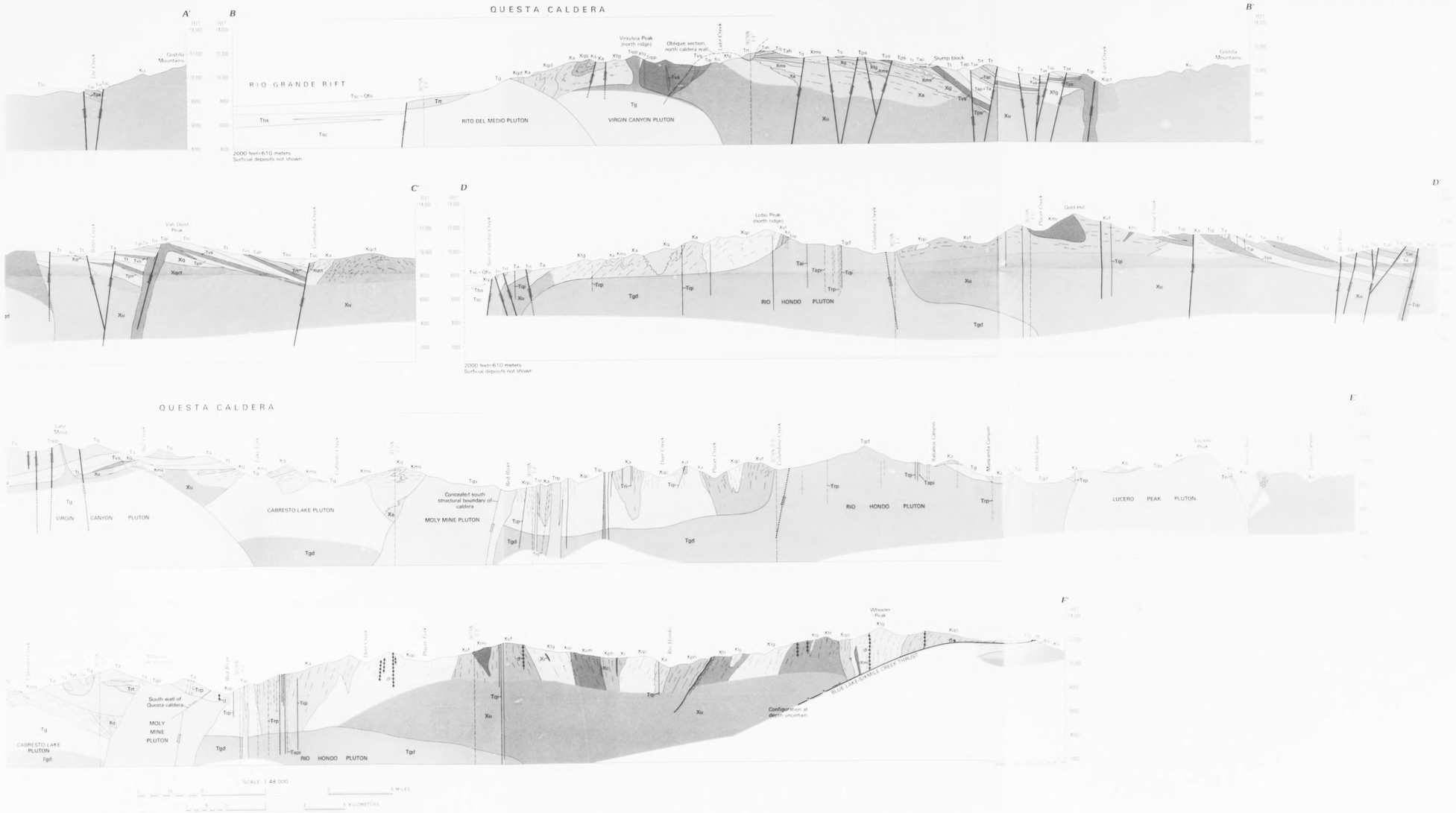

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